Calhoun County
Fetal and Infant Mortality Review
(FIMR)

2011 Annual Report

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Battle Creek Community Foundation
For good. For ever. For all.

United Way
Program Delivery Partner

Summary

Fetal and Infant Mortality Review (FIMR) is a surveillance methodology used nationwide and in 14 Michigan sites to monitor and understand infant death. The FIMR program serves as an assessment program, a core function of public health practice. Through the regular collection, analysis, and sharing of health data and information about risks and resources in a community, the FIMR program identifies trends in infant mortality and the factors that may be involved. Identifying these trends and their factors is the first step in planning interventions to decrease the Calhoun County infant mortality rate.

The Calhoun County FIMR Case Review Team (CRT) reviewed 13 cases of infants who died in 2011. An infant death is defined as the death of any infant born live who does not survive until his/her first birthday. Over three quarters (77%) of the reviewed deaths were neonatal deaths - having occurred within the first 28 days of life - with most of the deaths occurring within the first 24 hours of life (69%). Prematurity and extremely low birth weight (ELBW), or birth weight less than or equal to 750 grams, were associated with the majority (85%) of the cases reviewed. Maternal overweight or obesity was seen in 75% of the cases, maternal tobacco use was found in 42% of the cases, and poverty was present in more than two thirds (67%) of the cases reviewed. Of the 12 mothers involved in the 13 cases reviewed, over half (58%) had no drug test performed at delivery where it would have been indicated. The criteria that indicates a drug screen at delivery are late or no prenatal care (multiple missed appointments), unexplained pre-term labor, complications known to be associated with drug use, history of a prenatally drug exposed infant, symptomology or obvious behavior suggestive of alcohol or drug use, and history of drug use.

The review of cases accomplished by the CRT has resulted in 20 different recommendations being passed on to the Maternal and Infant Health Commission. Recommendations included improvements in social services and health care systems, implementing a standard, universal, routine drug screen, and ensuring that all women have access to preconception and interconception care.

Introduction

Fetal and Infant Mortality Review (FIMR) is a process of identification and analysis of factors that contribute to fetal and infant death through chart review and interview of individual cases. FIMR complements other studies of infant death but uses an approach that is community-based and designed to bring together local health providers, consumers, advocates, and leaders. FIMR identifies strengths and areas for improvement in overall service systems and community resources for women, children, and families. FIMR also provides direction towards the development of new policies to safeguard families.

FIMR has two goals:

- to describe significant social, economic, cultural, safety, health, and systems factors that contribute to mortality, and
- to design and implement community-based action plans founded on the information obtained from the reviews.

Notification (typically through arrival of a death certificate) initiates the case abstraction process. Birth and death certificates, prenatal, hospital, pediatric, EMS, and public health records, and autopsy reports are utilized. A Nurse Practitioner conducts voluntary home interviews with the family to assess the family's needs, provide appropriate referrals, and to obtain the mother's perceptions. This information is de-identified and compiled by the Nurse Practitioner or FIMR Coordinator to form a case summary. The FIMR Case Review Team (CRT) meets regularly to review completed case summaries. During team deliberations, factors associated with and contributing to infant deaths are identified and recommendations for policy development and systems change are compiled.

All information is kept confidential in compliance with HIPAA. Issue summary reports may be shared with the Maternal and Infant Health Commission, the Child Death Review, and other community action groups for consideration and implementation. De-identified case summary information is sent regularly to a statewide database administered by the Michigan Public Health Institute for surveillance and reporting purposes.

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FIMR is a surveillance methodology used in 14 Michigan sites and over 220 sites in 42 states to monitor and understand infant death. Information gained from the FIMR team review, in conjunction with vital statistics data, Pregnancy Risk Assessment Monitoring System (PRAMS) data, Behavioral Risk Factor Surveillance Survey (BRFSS) data, Maternal Mortality Review data, and other public health surveillance methods, can produce a complex system of information.

Acknowledgement

FIMR was first introduced to Calhoun County in 1999. Over a decade later and after many trials and tribulations, it has been revitalized and restored to become an efficiently functioning program and active voice in our community.

As FIMR enters into its 14th year of reviewing infant deaths in Calhoun County, recognition must be given to the dedicated group of people who volunteer their time to meet monthly as members of the FIMR Case Review Team. Without their passion and participation, the work of FIMR could not be done.

Calhoun County FIMR Case Review Team, 2011 Cases

- Kathryn Bernhardt, Calhoun County Department of Human Services
- Sara Birch, Oaklawn Hospital
- Muriel Crow, FIMR Abstractor/Home Interviewer, Calhoun County Public Health Department
- Rosemary Fournier, State FIMR Coordinator, Michigan Department of Community Health
- Summer Liston, Oaklawn Hospital
- Vivien McCurdy, Connect Health Services
- Heidi Pengra, Calhoun County Public Health Department
- Linda Ratti, Community Member
- Dr. Lesley Reid, Family Health Center
- Kristin Roux, Calhoun County Public Health Department
- Sallie Shears, Summit Pointe
- Erin Somerlott, FIMR Coordinator, Calhoun County Public Health Department
- Courtney Weathers, Health Educator, Calhoun County Public Health Department

It is also important to pay recognition to those area agencies that support the work of FIMR. Without their support, the work of FIMR would not be possible.

Calhoun County FIMR Financial Supporters, 2011 Cases

- Battle Creek Community Foundation
- Calhoun County Public Health Department
- Michigan Department of Community Health – Maternal Child Health Grant
- Michigan Public Health Institute
- United Way of Greater Battle Creek

2011 FIMR Data

Table 1 details the progress of Calhoun County FIMR over the last three years. Cases not reviewed by Calhoun County FIMR are reviewed by the Calhoun County Child Death Review Team, coordinated by Calhoun County Department of Human Services.

Table 1: Calhoun County Infant Mortality and FIMR Case Review

	2009	2010	2011
Total Infant Deaths[1]	21	18	17
FIMR CRT Reviews	14	14	13

Calhoun County continues to see a disparity in infant mortality rates between Caucasians and African Americans. The three-year (2008-2010) average rate was three times as high for African Americans (22.2)[2] than Caucasians (7.3)[3].

Table 2: Calhoun County African American Infant Mortality

	2009	2010	2011
African American Infant Deaths	5	7	4
Percent of Infant Deaths that were African American[4]	24%	39%	24%

Table 3: Causes of Death (as listed on death certificates), 2011

- Extreme prematurity (5)
- Prematurity (2)
- Nonviable infant (2)
- Sudden Unexpected Infant Death with co-sleeping (2) – Reviewed in CDR
- Extreme prematurity/Congenital anomaly
- Acute bronchitis and bronchiolitis
- Severe lung immaturity/Prematurity
- Trisomy 18
- Asphyxia – Reviewed in CDR
- Stillborn (no death certificate) – Not reviewed

1. 2009 – 2010 State official totals: 1989-2009 Michigan Resident Death Files and Michigan Resident Birth Files, Division for Vital Records & Health Statistics, Michigan Department of Community Health.
   2011 total is unofficial, includes number of death certificates received by the Calhoun County Public Health Department.
2. 1998- 2010 Michigan Resident Death Files and Michigan Resident Birth Files, Division for Vital Records & Health Statistics, Michigan Department of Community Health.
3. 1998- 2010 Michigan Resident Death Files and Michigan Resident Birth Files, Division for Vital Records & Health Statistics, Michigan Department of Community Health.
4. Race reported on death certificates received by Calhoun County Public Health Department.

According to a report released by the March of Dimes in March 2009, the average medical costs for the first year of life of an infant born healthy and full-term is approximately $4,500. The average medical costs for the first year of life of an infant born prematurely and/or low birth weight (less than 37 weeks gestation and/or less than 2,500 grams) is approximately $49,000.[1] In 2010, 11% of all infants born in Calhoun County were born prematurely and 7% were born low birth weight.[2] In 2010, 60% of the births in Calhoun County have been Medicaid-paid births, up from 40% in 2001.[3]

Table 4 shows the number of cases reviewed by gestational age. Seventy seven percent (77%) of the cases were infants with a gestational age of 23 weeks or less. The age of viability, or the point at which a fetus has some chance of surviving outside the mother if born prematurely, is viewed by many experts as being between 22 and 25 weeks of gestation.

Table 4: Gestational Age at Birth, 2011 Infant Deaths

N = 13	Total	Percent
≤ 20 weeks	3	23%
21 – 23 weeks	7	54%
24 – 27 weeks	1	8%
28 – 31 weeks	0	0%
32 – 36 weeks	0	0%
37 + weeks	2	15%

Table 5: Age of Infant at Time of Death, 2011 Infant Deaths

N = 13	Total	Percent
≤ 24 hours	9	69%
1 – 7 days	1	8%
8 – 28 days	0	0%
1 – 5 months	1	8%
6 – 12 months	2	15%

Table 6: Birth Weight, 2011 Infant Deaths

N = 13	Total	Percent
Extremely Low Birth Weight (<750 grams)	11	85%
Very Low Birth Weight (751 – 1500 grams)	0	0%
Moderate Low Birth Weight (1501 – 2499 grams)	0	0%
Normal Birth Weight (>2500 grams)	2	15%

1. March of Dimes Foundation. (2008). The Cost of Prematurity to Employers. Retrieved from http://marchofdimes.com/peristats/pdfdocs/cts/ThomsonAnalysis2008_SummaryDocument_final121208.pdf
2. 2010 Michigan Resident Birth Files, Division for Vital Records & Health Statistics, Michigan Department of Community Health.
3. Annie E. Casey Foundation (2010). Kids Count Data Center: Profile for Calhoun County. Michigan League for Human Services.

Table 7 includes demographic information regarding the mothers of the infants that died in 2011.

Table 7: Age of Mother at Time of Birth, 2011 Infant Deaths

N = 12	Total	Percent
≤ 18 years	1	8%
19 – 22 years	2	17%
23 – 26 years	1	8%
27 – 30 years	4	33%
31 – 34 years	3	25%
≥ 35 years	0	0%
Unknown	1	8%

The FIMR CRT reviews the case summaries and from this review of the data, the CRT identifies factors that were present in each of the cases. Tables 8 through 14 include selected information* taken from the issue summary reports completed for each case reviewed. The first column lists the factors included on issue summary reports. The second column lists the number of cases that were found to have the factor present. The third column lists the percentage of cases found to have this factor.

Table 8: Maternal Risk Factors, Medical

N = 12	Present	Percent
Preterm Labor	6	50%
Obese	5	42%
Infection (not STI)	4	33%
Oligohydramnios	4	33%
Overweight	4	33%
Chorioamnionitis	3	25%
Multiple Gestation	3	25%
Poor Nutrition	3	25%
First Pregnancy <18 years old	3	25%
Premature Rupture of Membranes	2	17%
Incompetent Cervix	2	17%
Sexually Transmitted Infection	2	17%
Insufficient Weight Gain	2	17%
Polyhydramnios	2	17%
Cord Problem	2	17%
No Prenatal Care	2	17%
>4 Live Births	2	17%

Table 9: Maternal Risk Factors, Previous Poor Birth Outcomes

N = 12	Present	Percent
Previous Spontaneous Abortion	4	33%

Table 10: Maternal Risk Factors, Mental Health

N = 12	Present	Percent
Maternal History of Mental Illness	4	33%
Depression During Pregnancy/Postpartum	2	17%

* Report includes all factors that were present in at least 2 (15%) of the 2011 cases reviewed.

Table 11: Maternal Risk Factors, Behavioral

N = 12	Present	Percent
No Drug Test	7	58%
Tobacco Use	5	42%
Unintended Pregnancy	3	25%
Second Hand Smoke Exposure	3	25%
Intended Pregnancy	2	17%
Illicit Drugs	2	17%
No Birth Control	2	17%
Alcohol Use	2	17%

Table 12: Maternal Risk Factors, Psychosocial

N = 12	Present	Percent
Poverty Present (Medicaid or No Insurance)	8	67%
Single Parent	7	58%
Private Insurance (HMO/nonHMO)	4	33%
Lack of Partner/FOB Support	2	17%
Maternal History of Abuse	2	17%
Client Distrust/Fear/Dissatisfaction	2	17%

Table 13: Fetal/Infant Risk Factors, Medical

N = 13	Present	Percent
Prematurity	11	85%
Extremely Low Birth Weight (<750 g)	11	85%
Congenital Anomalies	3	23%
Respiratory Distress Syndrome	3	23%
Infection/Sepsis	2	15%
No Pediatric Care	2	17%

Table 14: Prenatal Care and Documentation (Access to Data)

N=12	Present	Percent
Lack of Referrals	2	17%
Missing Data	2	17%
Multiple Providers/Sites	2	17%

Table 15 shows the percentage of cases in 2008, 2009, 2010, and 2011 with select factors.

Table 15: Selected Factors, 2008 – 2011

	2008	2009	2010	2011
Low Birth Weight (< 2500 grams)	86%	86%	79%	85%
Overweight/Obese	23%	14%	64%*	75%*
Extreme Prematurity (< 28 weeks)	79%	71%	57%	85%
Maternal Tobacco Use	46%	50%	36%	42%
Congenital Anomalies	21%	36%	29%	23%
Late Entry to Prenatal Care	7%	14%	14%	0%

* The increased percentage of obesity/overweight is likely due to improved reporting of maternal height & weight in the prenatal records.

FIMR Recommendations

After reviewing the data and identifying the factors present, the CRT forms recommendations for the Maternal and Infant Health Commission. Below are the CRT recommendations formed in response to the 13 reviews of infant deaths that occurred in 2011.

Multiple Recommendations

- Ensure that all women have access to preconception/interconception care. (10)
- Standard, universal, routine drug screen where indicated at delivery. These indicators are late entry to or no prenatal care (multiple missed appointments), unexplained pre-term labor, pregnancy complications known to be associated with drug use, history of a prenatally drug exposed infant, symptomology or obvious behavior suggestive of alcohol or drug use, and history of drug use. (10)
- Early introduction to intense home-based services with high-risk patients, including family planning. (3)
- Develop systems to provide for transportation and childcare to women seeking prenatal care. (2)
- Improved documentation from medical records, especially regarding infertility specialists. Look at exempting FIMR requests so that offices could pass on outside consultation and documentation to FIMR abstractors. (2)

Systems Issues

- All pregnant women need early and often prenatal care.
- Need for standardized ultrasound.
- Encourage appropriate pregnancy intervals.
- Standard UTI screening.
- Standardized, appropriate collection of placental samples.
- Implementation of coordination of care/case management to include mental health services, primary care, and specialist's services.
- Home-based intermittent skilled nursing visits to help with medications teaching and management.
- Extend maternal infant health services following the birth and death of a child.
- Ensure that pregnant women have access to prenatal care that is acceptable, accessible, and appropriate.
- Investigate system for Child Protective Services to better track mothers across states.
- Coordinate and strongly encourage pediatric follow up upon discharge from hospital.
- Regulate state oversight and licensure of direct entry-level providers, especially pertaining to lay midwives.

Education Issues

- Enhance community education to include unplanned/unwanted pregnancy intervention, including teen pregnancy prevention services.
- Inclusion of safe sleep practices in prenatal care education.
- Prenatal care education spread out over entire course of pregnancy versus one visit.

Conclusion

Infant mortality rates are often used to compare the health and well-being of populations across and within countries: a low rate of infant mortality typically signifies a healthier population. The Calhoun County Fetal and Infant Mortality Review (FIMR) program's community approach to improving the health of underserved women and infants plays a key role in forming recommendations to ultimately reduce the infant mortality rate within Calhoun County.

For more information on FIMR or for a copy of this report, please visit us on the web at http://www.calhouncountymi.gov/government/health_department/fetal_infant_mortality_review/ You may also contact Erin Somerlott, FIMR Coordinator, Calhoun County Public Health Department, 269-969-6482.